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VOLPE AND KOENIG, P.C.
UNITED PLAZA, SUITE 1600
30 SOUTH 17TH STREET
PHILADELPHIA, PA 19103

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PARK, HYUN D	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/589,225	JAMSEN ET AL.	
	Examiner	Art Unit	
	HYUN PARK	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _30 April 2007_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-22_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-22_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _08/11/2006_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1, 4, 8, 11, 16 are objected to because of the following informalities:

In Claim 1. "the length of a person's steps," "the distance covered," "the number of steps," lack antecedent basis.

In Claim 4, "the height of the sound transmitter," "the angle a." " the temperature of the air," "the direction of the wind," " the speed of the wind," lack antecedent basis.

In Claim 8, "the length of a person's steps," "distance covered," lack antecedent basis.

In Claim 11, "the height of the sound transmitter," "the angle a." " the temperature of the air," "the direction of the wind," " the speed of the wind," lacks antecedent basis.

In Claim 16, "the distance," "the initial information," lack antecedent basis.

Appropriate corrections are required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weir et al., US Pat No. 5,831,937 (hereinafter Weir) (cited by the applicant) in view of Vock et al., US PGPUB, 2006/0143645 (hereinafter Vock (1)).

Regarding Claim 1: Weir discloses a method for measuring the length of a person's (1) steps (Abstract, line 19), in which method the distance covered (S) and the number of steps (N) (Col. 10, lines 42-45) used is measured, wherein in the method

the distance covered (S) is measured by transit time measurement of sound frequency pulses (12a, 12b, 12c) (Col. 2, lines 23-25), which are transmitted using a delay (T) between the pulses (note: pulses inherently are not continuous, thus there is a delay (T) between the pulses);

the transit time of each sound pulse is measured between the moving person (1, B)(or subject) and a fixed point (A)(the base unit **3**; Fig. 1)(Abstract, lines 6-9);

and where before measuring the distance covered

a measuring time (M) (300)(or step time) used for measuring the length of steps is determined (Col. 8, lines 44-48, describes the data acquisition start and end time. This is the measuring time used for measuring the length of steps. Also, walking trial refers to the measuring time used for measuring the length of step as described in the Abstract, lines 14-20)

Weir however, does not disclose clocks of a transmission means (11) and a reception means (10) of the sound pulses synchronized before the transmission of a first sound pulse for the overall measuring time (M), whereby the reception means (10) of the sound pulses know both the moments of reception of the sound pulses (12a, 12b, 12c) and the moment of transmission (300) of each sound pulse (12a, 12b, 12c)

Vock (1) discloses a method for determining person's speed and distance traveled using ultrasound (Paragraph [0194], lines 8-9). In the disclosure, Vock (1) teaches synchronization of the transmission and reception to conserve energy (or reduce battery

consumption) (Paragraph [0250], lines 1-2, lines 5-8; Paragraph [0251], lines 12-16; Paragraph [0255], lines 1-6).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teachings of Vock (1) to ***synchronize*** the clocks of a transmission means (11) (ultrasound emitter **13**; Fig. 2) and a reception means (10)(ultrasound receiver **9**; Fig. 2) of the sound pulses before the transmission of a first sound pulses for the overall measuring time in Weir's portable ranging system ***to conserve energy*** of the battery powered (Col. 4, line 42-45) transponder **1** (Fig. 1) worn by the subject (Col. 4, lines 39-41) as taught by Vock (1), whereby the reception means (10) of the sound pulses know both the moments of reception of the sound pulses (12a, 12b, 12c) and the moment of transmission (300) of each sound pulse (12a, 12b, 12c)

Weir discloses calculating the instantaneous and mean acceleration by differentiating instant and mean velocity, respectively (Col. 9, lines 17-19), but does not disclose number of steps taken during the measurement are measured by an acceleration transducer (48) carried along by the person.

Vock (1) discloses a method for determining speed or distance traveled by a moving person utilizing acceleration transducer (or accelerometer) (Abstract, lines 5-6) carried by the person (Abstract, lines 1-2).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to measure the number of steps taken during the measurement by using Vock (1)'s accelerometer in the Weir's transponder **1** (Fig. 1) carried along by the person, since the accelerometer not only can detect various motions, such as free fall (Paragraph [0029], lines 1-3), spin (Paragraph [0030], lines 8-10), jarring, power and/or impact (Paragraph [0030], lines 12-14) , but also can provide continuous, and *real time* movement data (Paragraph [0031], lines 1-6) as taught by Vock (1), instead of from post-measurement calculations.

Regarding Claim 2: The modified method of Weir is applied as above. Weir discloses a method, wherein the means used for transmitting the sound pulses (12a, 12b, 12c) is a sound receiver (10) (ultrasound receiver **9**; Fig. 2), which can receive and indicate a sound pulse transmitted in the frequency range used. (the range of the ultrasound frequency is anything above the range of human ear, which is generally greater than 20,000 Hz).

Regarding Claim 3: The modified method of Weir is applied as above. Weir discloses a method, wherein the moving person (1) (or subject; Col. 4, lines 39-41) has the sound transmitter (11) (Ultrasound emitter **13**; Fig. 2), which transmits (311-314) sound frequency pulses (12a, 12b, 12c) (ultrasound pulses; Abstract, lines 6-10), which

are received (320-322) by the sound receiver (10) (ultrasound receiver **9**; Fig. 2), at a fixed point (A) (stationary base unit **3** is the fixed point; Fig. 1).

Regarding Claim 4: The modified method of Weir is applied as above. Weir discloses a method, wherein the distance estimate (S) obtained by the transit time measurement of the sound pulse (12a, 12b, 12c) is corrected (321) (or calibrated) by at least one of the following factors having an effect on the transit time of the sound pulse (12a, 12b, 12c): the temperature of the air (Col. 5, lines 25-41).

Regarding Claim 5: The modified method of Weir is applied as above. Vock (1) discloses a method, wherein after the measuring period, the sound transmitter (11) (or sensor **482** (Fig. 37) in the form of a monitor device such as shown in Fig. 1 that transmits data to the receiver **492**, as described in the Paragraph [0287, lines 15-20) sends an ending pulse (330) of the step length measurement, which ending pulse is received (340) in the sound receiver (10) (receiver **492**; Fig. 37) and in which the final distance (S) (or overall distance traveled; Paragraph [0300], lines 23-27) (or final distance as defined by the distance between a first location and a second location; Paragraph [0238], lines 5-9) of the person (1) from the sound receiver (10) (receiver **462**; Fig. 37) is calculated (Paragraph [0285], lines 6-9).

Each time the shoe lands on the ground, the impact corresponding to striking the ground is detected by the sensor **482** (Fig. 37) (Paragraph [0288], lines 3-4), where the

data is transmitted as event pulses (Paragraph [0220], lines 1-5). At the end of the measuring period, the ending pulse would then correspond to the final “impact” the shoe makes with the ground as the person comes to a complete stop.

Regarding Claim 6: The modified method of Weir is applied as above. Vock (1) discloses a method, wherein the overall (or total) distance traveled is (Paragraph [0300], lines 24-27) measured using the accelerometer (or acceleration transducer). Vock (1)'s accelerometer can also measure the number of steps, since each step taken by a person during walking is a high impact event that is detected by the accelerometer and tagged (Paragraph [0212], lines 1-8). Based on the measured values, it would have been obvious to a person of ordinary skill in the art at the time of the invention to calculate the step length by dividing the measured final distance (S) by the number of steps (N) measured by the acceleration transducer (or accelerometer), and also requires routine skill in the art.

Regarding Claim 7: The modified method of Weir is applied as above. Vock (1) discloses a method, wherein the number of steps (N) measured is transferred from the sound transmitter (11) (device **10**; Fig. 1) to the sound receiver (10) (receiver **24**; Fig. 1) through a wireless electric link (Paragraph [0193], lines 1-2).

Regarding Claim 8: A measuring arrangement for measuring the length of a person's (1) steps (Abstract, line 19), which arrangement comprises means for

measuring the distance covered (S) and number of steps (N) used (Col. 10, lines 42-45), that in wherein the measuring arrangement - the distance covered (S) is arranged to be measured by transit time measurement of sound frequency pulses (12a, 12b, 12c) (Col. 2, lines 23-25), which are transmitted using a delay (r) between the pulses (note: pulses are not continuous, and there is a delay (T) between the pulses);

the transit time of each sound pulse is arranged to be measured between a moving person (1, B) (or subject) and a fixed point (A) (the base unit **3**; Fig. 1)(Abstract, lines 6-9);

and where before measuring the distance covered

a measuring time (M) (300)(or step time) to be used has been determined (Col. 8, lines 44-48, describes the data acquisition start and end time. This is the measuring time used for measuring the length of steps. Also, walking trial refers to the measuring time used for measuring the length of step as described in the Abstract, lines 14-20)

Weir however, does not disclose clocks of a transmission means (11) and a reception means (10) of the sound pulses synchronized before the transmission of a first sound pulse for the overall measuring time (M), whereby the reception means (10) of the sound pulses know both the moments of reception of the sound pulses (12a, 12b, 12c) and the moment of transmission (300) of each sound pulse (12a, 12b, 12c)

Vock (1) discloses a method for determining person's speed and distance traveled using ultrasound (Paragraph [0194], lines 8-9). In the disclosure, Vock (1) teaches synchronization of the transmission and reception to conserve energy (or reduce battery consumption) (Paragraph [0250], lines 1-2, lines 5-8; Paragraph [0251], lines 12-16; Paragraph [0255], lines 1-6).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the teachings of Vock (1) to ***synchronize*** the clocks of a transmission means (11) (ultrasound emitter **13**; Fig. 2) and a reception means (10)(ultrasound receiver **9**; Fig. 2) of the sound pulses before the transmission of a first sound pulses for the overall measuring time in Weir's portable ranging system ***to conserve energy*** of the battery powered (Col. 4, line 42-45) transponder **1** (Fig. 1) worn by the subject (Col. 4, lines 39-41) as taught by Vock (1), whereby the reception means (10) of the sound pulses know both the moments of reception of the sound pulses (12a, 12b, 12c) and the moment of transmission (300) of each sound pulse (12a, 12b, 12c)

Weir discloses calculating the instantaneous and mean acceleration by differentiating instant and mean velocity, respectively (Col. 9, lines 17-19), but does not disclose number of steps taken during the measurement are measured by an acceleration transducer (48) carried along by the person.

Vock (1) discloses a method for determining speed or distance traveled by a moving person utilizing acceleration transducer (or accelerometer) (Abstract, lines 5-6) carried by the person (Abstract, lines 1-2).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to measure the number of steps taken during the measurement by using Vock (1)'s accelerometer in the Weir's transponder **1** (Fig. 1) carried along by the person, since the accelerometer not only can detect various motions, such as free fall (Paragraph [0029], lines 1-3), spin (Paragraph [0030], lines 8-10), jarring, power and/or impact (Paragraph [0030], lines 12-14) , but also can provide continuous, and *real time* movement data (Paragraph [0031], lines 1-6) as taught by Vock (1), instead of from post-measurement calculations.

and that number of steps (N) taken during the measurement of the length of steps is arranged to be calculated from acceleration pulses caused by the steps, measured by an acceleration transducer (48) (or accelerometer) carried along by the person.(Paragraph [0286], 1-6) (Each time the shoe lands on the ground, the impact corresponding to striking the ground is detected by the sensor's accelerometer **482** (Fig. 37) (or acceleration transducer) (Paragraph [0288], lines 3-4), where the data is transmitted as event pulses (Paragraph [0220], lines 1-5). Each impact is a single step, and the step length or the length of each steps correspond to points between two

successive impacts. The number of steps taken during the measurement then is simply the summation of all the successive impacts detected by the accelerometer.

Regarding Claim 9: The modified measuring arrangement of Weir is applied as above. Weir disclose using ultrasound pulses for analyzing gait (Abstract, lines 6-10), wherein the ultrasound pulses transmitted by the transponder **1** (Fig. 1) is received by the receiver of the base unit **3** (Fig. 1).

The modified method of Weir however, does not disclose a measuring arrangement, wherein the means for transmitting the sound pulses (12a, 12b, 12c) comprise a sound transmitter (11), which is arranged to transmit sound pulses essentially in the frequency range of 1000-2000 Hz and that the means for receiving the sound pulses comprise a sound receiver (10), which can both receive and indicate a sound pulse transmitted in the frequency range used.

It is a common knowledge that the range is inversely proportional to the frequency (i.e., the lower the frequency, the greater is the range). Accuracy of the measurement (or resolution) however, degrades with frequency. As an example, consider the sound waves penetrating into the human tissue. The lower frequency will allow the sound waves to penetrate further into the tissue as compared to higher frequency sound waves, but at the cost of degraded resolution. The choice of frequency then is a compromise between better range and better accuracy. For a distance

measuring system where the person is walking (or running) away to an unspecified distance from the fixed location, it would have been obvious to a person of ordinary skill in the art at the time of the invention to choose a range of frequency that allows greater flexibility in terms of distance rather than accuracy, i.e., lower frequency such as the range of 1000-2000 Hz as compared to ultrasound (>20,000 Hz).

Regarding Claim 10: The modified measuring arrangement of Weir is applied as above. Weir discloses a measuring arrangement, wherein the moving person (1) (or subject; Col. 4, lines 39-41) has the sound transmitter (11) (Ultrasound emitter **13**; Fig. 2), which is arranged to transmit (311-314) sound frequency pulses (12a, 12b, 12c) (ultrasound pulses; Abstract, lines 6-10), which are arranged to be received (320-322) by the sound receiver (10) (ultrasound receiver **9**; Fig. 2), at a fixed point (A) (stationary base unit **3** is the fixed point; Fig. 1).

Regarding Claim 11: The modified measuring arrangement of Weir is applied as above. Weir discloses a measuring arrangement, wherein the distance estimate (S) obtained by the transit time measurement of the sound pulse (12a, 12b, 12c) is arranged to be corrected (321) (or calibrated) by at least one of the following factors having an effect on the transit time of the sound pulse (12a, 12b, 12c): the temperature of the air (Col. 5, lines 25-41).

Regarding Claim 12: The modified measuring arrangement of Weir is applied as

above. Vock (1) discloses using a sensor **482** (Fig. 37) with an accelerometer to detect the impacts **500** (Fig. 38) the shoe makes with the ground (Paragraph [0289], lines 1-6).

Vock (1) does not disclose a measuring arrangement, wherein the step length measurement is arranged to be stopped by a stopping pulse (330) sent by the sound transmitter (11).

Each time the shoe lands on the ground, the impact corresponding to striking the ground is detected by the sensor **482** (Fig. 37) (Paragraph [0288], lines 3-4), where the data is transmitted as event pulses (Paragraph [0220], lines 1-5). At the end of the measuring period, the stopping pulse would then correspond to the final "impact" the shoe makes with the ground as the person comes to a complete stop. Thus, the step measurement is essentially arranged to be stopped by a stopping pulse sent by the sound transmitter just when the person's shoe makes the final impact with the ground and comes to a complete stop.

Regarding Claim 13: The modified measuring arrangement of Weir is applied as above. Vock (1) discloses wherein after the reception of the stopping pulse (340), the sound receiver (10) is arranged to calculate the final distance (S) (or overall distance traveled; Paragraph [0300], lines 23-27) (or final distance as defined by the distance between a first location and a second location; Paragraph [0238], lines 5-9) of the person (1) from the sound receiver (10). (Paragraph [0285], lines 6-9)

Regarding Claim 14: The modified measuring arrangement of Weir is applied as above. Vock (1) discloses a measuring arrangement, wherein the total distance (or overall distance traveled; Paragraph [0300], lines 23-27) (or final distance as defined by the distance between a first location and a second location; Paragraph [0238], lines 5-9) traveled is measured using the accelerometer (or acceleration transducer).

Vock (1)'s accelerometer can also measure the number of steps, since each step taken by a person during walking is a high impact event that is detected by the accelerometer and tagged (Paragraph [0212], lines 1-8). Based on the measured values, it would have been obvious to a person of ordinary skill in the art at the time of the invention to calculate the step length by dividing the measured final distance (S) by the number of steps (N) (or impacts) measured by the acceleration transducer (or accelerometer), and only requires routine skill in the art.

Regarding Claim 15: The modified measuring arrangement of Weir is applied as above. Vock (1) discloses a measuring arrangement, wherein the number of steps (N) measured is arranged to be transferred from the sound transmitter (11) to the sound-receiver (10) through a wireless electric link (Paragraph [0193], lines 1-2).

Regarding Claim 16: Vock (1) discloses a sound receiver (10) (**231**; Fig. 10G), wherein it comprises:

a central processing unit (CPU) (or processor **235**; Fig. 10G);

a memory (**238**; Fig. 10G);

a clock function (41) for calculating the transit time of a received sound pulse and for performing the calculation of the distance (S) on the basis of that (**237**; Fig. 10G);

a means for synchronizing the clock function (41) before a first received sound pulse for the overall measuring time (M) (Paragraph [0250], lines 6-8; Paragraph [0251], lines 14-21);

a user interface (43) for inputting the initial information of the step length measurement and for presenting the measurement result of the calculated length of steps (Paragraph [0267], lines 12-20; Fig. 16);

Vock (1) does not disclose a sound frequency receiver (42) for receiving and indicating a sound signal of essentially the frequency of 1,000-2,000 Hz and a power source (44).

It is a common knowledge that the range is inversely proportional to the frequency (i.e., the lower the frequency, the greater is the range). Accuracy of the measurement (or resolution) however, degrades with frequency. As an example, consider the sound waves penetrating into the human tissue. The lower frequency will allow the sound waves to penetrate further into the tissue as compared to higher frequency sound waves, but at the cost of degraded resolution. The choice of frequency then is a compromise between better range and better accuracy. For a distance measuring system where the person is walking (or running) away to an unspecified distance from the fixed location, it would have been obvious to a person of ordinary skill in the art at the time of the invention to choose a range of frequency that allows greater flexibility in terms of distance rather than accuracy, i.e., lower frequency such as the range of 1000-2000 Hz as compared to ultrasound (>20,000 Hz).

Regarding Claim 17: Vock (1) is applied as above. Vock (1) teaches that the receiver can be programmed to carry out a specified function (namely to indicate the occurrence of air-time) in the Paragraph [0233], lines 29-33.

Vock (1) however, does not explicitly discloses a receiver, wherein the input of the initial information of the step length measurement, the determination of the transit time of the sound pulse and the determination of the length of steps on the basis of that and presenting the measurement result have been implemented by a program application saved in the sound pulse reception means (10).

The fact that the receiver can be programmed to carry out a specified function as taught by Vock (1), implies that the receiver can be programmed to carry out other functions as well. Thus, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have a receiver, wherein the input of the initial information of the step length measurement, the determination of the transit time of the sound pulse and the determination of the length of steps on the basis of that and presenting the measurement result have been implemented by a program application saved in the sound pulse reception means (10).

Regarding Claim 18: Vock (1) discloses a receiver, wherein it is part of a terminal of a cellular network (Paragraph], lines 19-21).

5. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vock (1) in view of Vock et al., US Pat no. 6,266,623 (hereinafter Vock (2)).

Regarding Claim 19: Vock (1) discloses a sound transmitter (11) (sensor **231**; Fig. 10I), comprising

a central processing unit (CPU) (or processor **235'**; Fig. **10I**);

a memory **(236'**; Fig. 10I);

a clock function (45) for transmitting a sound pulse used in the measurement at the intervals of a certain delay (r) **(237'**; Fig. 10I);

for detecting the end of the time (M) defined for the measurement;
(Each time the shoe lands on the ground, the impact corresponding to striking the ground is detected by the sensor **482** (Fig. 37) (Paragraph [0288], lines 3-4). At the end of the measuring period, the stopping pulse would then correspond to the final "impact" the shoe makes with the ground as the person comes to a complete stop, and this would correspond to detecting the end of the time defined for the measurement by the sensor.

for sending a measurement ending pulse; (where the data is transmitted as event pulses (Paragraph [0220], lines 1-5).

a means for synchronizing the clock function (45) before transmitting a first sound pulse for the overall measuring time (M) (Paragraph [0250], lines 6-8; Paragraph [0251], lines 14-21);

a sound frequency transmitter (46) for transmitting a sound signal of essentially the frequency of 1,000-2,000 Hz;

It is a common knowledge that the range is inversely proportional to the frequency (i.e., the lower the frequency, the greater is the range). Accuracy of the measurement (or resolution) however, degrades with frequency. As an example, consider the sound waves penetrating into the human tissue. The lower frequency will allow the sound waves to penetrate further into the tissue as compared to higher frequency sound waves, but at the cost of degraded resolution. The choice of frequency then is a compromise between better range and better accuracy. For a distance measuring system where the person is walking (or running) away to an unspecified distance from the fixed location, it would have been obvious to a person of ordinary skill in the art at the time of the invention to choose a range of frequency that allows greater flexibility in terms of distance rather than accuracy, i.e., lower frequency such as the range of 1000-2000 Hz as compared to ultrasound (>20,000 Hz).

a means (48) for detecting an acceleration peak caused by a step and for saving the number (N) of the acceleration peaks detected and - a power source (44) (Paragraph [0370], lines 12-16; Fig. 38).

Vock (1) does not disclose a user interface (47) for starting the step length measurement;

Vock (2) discloses a user interface (user button interface **622**; Fig. 23) (Fig. 3) that can be used as a pedometer by a jogger (Col. 28, lines 24-26), where the data acquired is transmitted back to a remote location **632** (Fig. 23) for storage and processing (Col. 28, lines 6-8).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate Vock (2)'s user interface in Vock's transmitter device so as to provide a user the capability and flexibility to *selectively* start (or start the step length measurement) and stop the acquisition of data by the apparatus (Col. 3, lines 1-4) and directly view the recorded information on the display **52** (Fig. 3) (Col. 9, lines 35-37) such as speed (Col. 9, line 52), without having the user to return to the location of the remote receiver to view the measurements.

Regarding Claim 20: The modified Vock (1) is applied as above. Vock (1) discloses programming the transmitter, namely the MMD (movement monitoring device) for a specified function in Paragraph [0041], lines 1-2, Paragraph [0042], lines 12-13 (namely to detect 10 g event), and Paragraph [0042], lines 20-21 (namely to record and time-tag 5 g event).

Vock (1) however, does not explicitly discloses a sound transmitter (11), wherein the delay (z) used in the transmission of the sound pulse, the length (M) of the step length measurement time and the determination of the transmission moment of the ending

pulse have been implemented by a program application saved in the sound transmitter (10)

The fact that the transmitter can be programmed to carry out a specified function as taught by Vock (1), implies that the transmitter can be programmed to carry out other functions as well. Thus, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have a sound transmitter, wherein the delay (z) used in the transmission of the sound pulse, the length (M) of the step length measurement time and the determination of the transmission moment of the ending pulse have been implemented by a program application saved in the sound transmitter (10)

Regarding Claim 21: The modified Vock (1) is applied as above. Vock (1) discloses a sound transmitter (11), wherein it also comprises a means for transferring the number (N) of the acceleration peaks by a wireless data transfer link to another device (Paragraph [0370], lines 12-16)

Regarding Claim 22: The modified Vock (1) is applied as above. Vock (1) discloses a sound transmitter (11), wherein it is part of a terminal of a cellular network (Paragraph [0013], lines 19-21).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HYUN PARK whose telephone number is (571)270-7922. The examiner can normally be reached on 8-4 PM, M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on (571)272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/H. P./

07/22/2009

Drew A. Dunn
/Drew A. Dunn/
Supervisory Patent Examiner, Art Unit 2863